National Health and Nutrition Examination Survey 2003-2004

Documentation, Codebook, and Frequencies

Laboratory Component:
Ferritin and Transferrin Receptor

Survey Years:
2003 to 2004

SAS Export File:
L06TFR_C.XPT

First Published: December 2006
Last Revised: N/A

NHANES 2003–2004 Data Documentation

Laboratory Assessment: Lab 6 – Ferritin and Transferrin Receptor

Years of Coverage: 2003–2004 **First Published:** December, 2006 **Last Revised:** N/A

Ferritin will be added at a later date.

Component Description

Ferritin and Transferrin Receptor

The objectives of this component are: 1) to provide data for monitoring secular trends in measures of nutritional status in the U.S. population; 2) to evaluate the effect of people's habits and behaviors such as physical activity and the use of alcohol, tobacco, and dietary supplements on people's nutritional status; and 3) to evaluate the effect of changes in nutrition and public health policies including welfare reform legislation, food fortification policy, and child nutrition programs on the nutritional status of the U.S. population. These data will be used to estimate deficiencies and toxicities of specific nutrients in the population and subgroups, to provide population reference data, and to estimate the contribution of diet, supplements, and other factors to serum levels of nutrients. Data will be used for research to further define nutrient requirements as well as optimal levels for disease prevention and health promotion.

Eligible Sample

Ferritin and Transferrin Receptor

Participants aged 1-5 years both sexes and females 12 to 49 years who do not meet any of the exclusion criteria are eligible.

Description of Laboratory Methodology

Ferritin

Two methods were used in 2003-2004. The National Center for Environmental Health analyzed all 2003 samples with the BioRad assay and all 2004 samples with the Roche/Hitachi assay.

1. BioRad assay:

Ferritin is measured by using the Bio-Rad Laboratories' "QuantImune Ferritin IRMA" kit, which is a single-incubation two-site immunoradiometric assay (IRMA) based on the general principles of assays as described by Addison et al. and Miles and modified by Jeong

et al. In this IRMA, which measures the most basic isoferritin, the highly purified ^{125}I-labeled antibody to ferritin is the tracer, and the ferritin antibodies are immobilized on polyacrylamide beads as the solid phase. Serum or ferritin standards (made from human liver) are mixed with the combined tracer/solid-phase antibody reagent, and the mixture is incubated. During incubation, both the immobilized and the ^{125}I-labeled antibodies bind to the ferritin antigen in the serum or standards, thus creating a "sandwich."

2. Roche/Hitachi assay:

The method principle for measurement of Ferritin is immuno-turbidimetry using Roche kits on the Hitachi 912 clinical analyzer. Latex bound Ferritin antibodies react with the antigen in the sample to form an antigen/antibody complex. Following agglutination, this is measured turbidimetrically. Turbidity formed is proportional to the Ferritin concentration, and is measured at 700nm (primary wavelength).

Transferrin Receptor

The method principle for measurement of soluble transferrin receptor (sTfR) is immuno-turbidimetry using Roche kits on the Hitachi 912 clinical analyzer. Latex bound anti-sTfR antibodies react with the antigen in the sample to form an antigen/antibody complex. Following agglutination, this is measured turbidimetrically.

Laboratory Quality Control and Monitoring

The NHANES quality control and quality assurance protocols (QA/QC) meet the 1988 Clinical Laboratory Improvement Act mandates. Detailed quality control and quality assurance instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Read the LABDOC file for detailed QA/QC protocols.

A detailed description of the quality assurance and quality control procedures can be found at NHANES web site.

Data Processing and Editing

Serum specimens are processed, stored, and shipped to the Division of Environmental Health Laboratory Sciences, National Center for Environmental Health, Centers for Disease Control and Prevention for analysis.

Detailed specimen collection and processing instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Vials are stored under appropriate frozen (–20°C) conditions until

they are shipped to National Center for Environmental Health for testing.

This file contains no top coding.

One derived variable was created in this data file. The formula for its derivation is as follows:

The ferritin in ng/mL was converted to µg/L by multiplying by 1.

Detailed instructions on specimen collection and processing can be found at NHANES web page.

Analytic Notes

The analysis of NHANES 2003–2004 laboratory data must be conducted with the key survey design and basic demographic variables. The NHANES 2003–2004 Household Questionnaire Data Files contain demographic data, health indicators, and other related information collected during household interviews. The Household Questionnaire Data Files also contain all survey design variables and sample weights required to analyze these data. The Phlebotomy Examination file includes auxiliary information on duration of fasting, the time of day of the venipuncture, and the conditions precluding venipuncture. The Household Questionnaire and Phlebotomy Exam files may be linked to the laboratory data file using the unique survey participant identifier SEQN.

References

1. None

Locator Fields

Title: Ferritin and Transferrin Receptor
Contact Number: 1-866-441-NCHS

Years of Content: 2003–2004

First Published: December 2006

Revised: N/A

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Ferritin and Transferrin Receptor
Record Source: NHANES 2003–2004

Survey Methodology: NHANES 2003–2004 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

Medium: NHANES Web site; SAS transport files

National Health and Nutrition Examination Survey
Codebook for Data Production (2003-2004)

Ferritin and Transferrin Receptor (L06TFR_C)
Person Level Data

First Published: December 2006
Last Revised: N/A

SEQN	Target
	B(1 Yrs. to 5 Yrs.) F(12 Yrs. to 49 Yrs.)
Hard Edits	**SAS Label**
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	

LBXTFR	Target
	B(1 Yrs. to 5 Yrs.) F(12 Yrs. to 49 Yrs.)
Hard Edits	**SAS Label**
0 to 9.99	Transferrin Receptor
English Text: Transferrin Receptor	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
1.3 to 28.9	Range of Values	2831	2831	
.	Missing	734	3565	